when buying a fan how much quietness you want to pay for.

Hoods often have lights and filters. Be sure that the light is bright enough for your range and that the bulb can be easily replaced when it burns out. The filter should be easy to remove so that it can be cleaned on a regular basis. This is very important because a dirty filter will reduce the air flow. If it is allowed to collect enough dirt and grease, it may cause odors and even become a fire hazard.

Hoods should be firm to the grasp and constructed with seams that are easily cleaned. A flimsy hood is apt to be a noisy one.

Bathrooms and laundry areas are often equipped with ceiling or wall mounted fans. All that is exposed in the room is a grill. Fans are sized to provide eight air changes (about 1.1 cfm per square feet of floor area) per hour in a bathroom, and six air changes (about .8 cfm per square feet of floor area) per hour in a laundry room. Other rooms equipped with ventilating fans should use a minimum of six air changes per hour.

Fans in bathrooms and laundry rooms should be installed opposite the side of the room where the air enters so there will be air flow across the room.

Control switches of various types are available for fan operation. These vary from a standard on/off wall switch to a timer control and a variable speed control. The degree of control desired should be carefully studied so that your needs will be met.

Check local building or other codes that may apply to house construction when installing ventilating equipment in your home.

Duct work should be planned with the shortest run and with the fewest elbows to reach the outside. Quality galvanized or aluminum sheet metal is recommended for ducts. Be sure they are sized according to the manufacturer's recommendation.

Duct work which extends through unheated areas should be insulated to prevent condensation that may form and drip back into the house.

Floor Coverings— Resilient, Wood, Tiles, and Clay

TRADITIONALLY, PEOPLE have used linoleum in areas such as the kitchen, ceramic tile in the bathroom, and wood floors throughout the rest of the house. With the variety of flooring materials available today—approximately 30 types and hundreds of varieties—there is little reason to be bound by tradition.

In making a choice, livability, esthetics, durability, maintenance, and cost should be considered. Remember, no one material is ideally suited to the requirements of every room in your home.

The principal kinds of floor coverings used as wearing or "finished" surfaces are: Resilient, Wood, Ceramic Tile, Clay, and Carpet. The first four will be considered here.

Resilient surfaces refer to a number of different types of water-resistant materials that range from the traditional linoleum available in rolls to thin sheets or tile materials differentiated according to their ingredients: asphalt, vinyl, vinyl asbestos, rubber, and cork.

They are dense and have non-absorbent surfaces. Their resilience aids in sound control and provides resistance to indentation. Density of the material usually provides long life and ease of maintenance. The most expensive material will usually give the most beauty and highest wear resistance. The lowest cost materials give the least wear and should be used only as a short term covering.

The sheet materials are more difficult to install than tile; however, in comparable materials, sheet usually costs less than tile. Most resilient surfaces are secured to the subfloor with an adhesive: linoleum paste, asphalt emulsion, latex, or epoxy. What you use is

dictated by the flooring manufacturer's specifications.

Linoleum is a blend of linseed oil, pigments, fillers, and resin binders bonded to a backing of asphalt-saturated felt. It is available in solid colors or with inlaid, embossed, or textured patterns, simulating stone, wood, or tile. It is available in rolls eight feet or wider and tiles either 9″ X 9″ or 12″ X 12″ square with thicknesses of 1/16″, .090″, and ⅛″.

Linoleum provides fair wear resistance, and its color extends completely through to the backing material.

Inlaid linoleum has a hard durable surface, is greaseproof, and easy to clean; however it is damaged by cleaning products containing alkali solutions.

It should not be installed on a concrete slab on grade (the ground), since moisture permeating through the concrete from below will cause the material to rot.

Asphalt tile is a combination of asbestos fibers, ground limestone, and mineral pigments with an asphalt binder. It is the least expensive and most commonly used tile. Its price depends on the color; dark colors are the least expensive, light colors and special patterns are the most expensive.

Asphalt tiles are manufactured with the pattern through the total thickness. Some tile patterns simulate other materials. In this case, the pattern does not penetrate its thickness and it will wear rapidly under heavy use.

Normal tile size is ⅛″ thick and 9″ X 9″ square.

Asphalt tile will stain and break down if it contacts animal fats and mineral oils. It is brittle and breaks easily. Its recovery from indentation is negligible. It can, however, be used on concrete slabs on grade and where there may be a moisture problem.

Vinyl floor covering's chief ingredient is polyvinyl chloride (PVC). It also contains resin binders, with mineral fillers, stabilizers, plasticizers, and pigments. The vinyl may be filled or clear.

Clear vinyl consists of a layer of opaque particles or pigments covered with a wearing surface of clear vinyl bonded to a vinyl or polymer-impregnated asbestos fiber or resin-saturated felt. The clear vinyl surface provides high resistance to wear.

Filled vinyl is made of chips of vinyl of varied color and shape immersed in a clear vinyl base and bonded by heat and pressure. When used in a basement, a vapor barrier or an epoxy adhesive should be used to install it.

Vinyl tile is the most costly, but also the most wear resistant and easily maintained of the various tiles. It is produced in standard size squares, 9″ X 9″ and 12″ X 12″, in standard thicknesses of 1/16″, .080″, 3/32″, and ⅛″.

Sheet vinyl may be produced with a layer of vinyl foam bonded to the backing or between the finish surface and the backing. The result is a resilient flooring with good walking comfort and an effective sound absorbent quality.

The vinyl is produced in rolls eight feet wide or wider and can be installed over most subsurfaces. While the material has high resistance to grease, stains, and alkali, its surface is easily damaged by abrasion and indentation since it is, generally, a soft product.

Vinyl-Asbestos tile consists of blended compositions of asbestos fibers, vinyls, plasticizers, color pigments, and fillers. The tiles, without backing, are 9″ X 9″ or 12″ X 12″ square and 1/16″, 3/32″, and ⅛″ thick.

The tile may be obtained in marbleized patterns, or textured to simulate stone, marble, travertine, and wood.

It is semiflexible and requires a rigid subfloor for support. The tile has high resistance to grease, oils, alkaline substances, and some acids. It is quiet underfoot and many forms can go without waxing for extended periods of time. It can be used almost anywhere, and can be obtained with a peel-and-stick backing.

Rubber tile is based on natural or synthetic rubber. Mineral fillers and

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nonfading organic pigments are used to produce a narrow range of colors and patterns.

The standard sizes are 9″ X 9″ and 12″ X 12″. Larger sizes are available at higher cost. The thicknesses are 0.080″, ⅛″, and 3/16″.

Rubber tile is resilient and has high resistance to indentation. The material is softened by petroleum products and its resistance to grease and kitchen oils depends on its method of manufacture. Waxing and buffing are necessary to maintain a high gloss. The surface becomes slippery when wet.

Use of a vapor barrier or epoxy adhesive for a slab on grade installation is required.

Cork tile consists of granulated cork bark combined with a synthetic resin as a binder. The best tile has a clear film of vinyl applied to improve its durability, water resistance, and ease of maintenance. Tile sizes are 6″ X 6″ and 12″ X 12″ with a range of thicknesses from ⅛″ to ½″.

Cork floors are great for foot comfort and sound control. They wear rapidly and do not resist impact loads well. Maintenance is difficult since the material is broken down by grease and alkalies.

Wood floorings. Many varieties of both hard and soft woods are available for flooring.

Certain hardwoods, because of their high resistance to wear, are more often used than others. Two are oak and maple.

Wood flooring is finished with a combination of coatings such as a sealer and varnish, or a liquid plastic.

Wood flooring may be simply nailed to the subfloor or, when used over a concrete slab, nailed to wood "sleepers" fastened to the slab. In either case, the floor is sanded smooth, and finished with stain and sealer.

The most commonly used hardwood flooring is oak because of its beauty, warmth, and durability. Maple flooring is produced from the sugar, or rock, maple. It is smooth, strong, and hard. The grain of maple does not have as much contrast as oak; however, where a smooth polished surface is necessary, maple makes a superior floor.

Beech, birch, hickory, and several other hardwoods are also used.

Hardwood strip flooring is hollowed or has "V" slots cut into its back surface to minimize warping. It is produced in thicknesses of ⅜″, ½″, or 25/32″ and widths varying from 1½″ to 3¼″, with the most popular width being 2¼″, and is tongue and grooved to provide tight joints.

Hardwood flooring is graded on its appearance according to the number of defects, variations of color, and surface characteristics. Strength and wear are not dependent on grading since all grades are comparable in these respects.

Strip flooring is available prefinished. The finish is applied at the factory and the floor can be used right after installation. It comes as imitation peg style, random width, and simulated plank.

Softwood Flooring—The softwood most used is southern yellow pine; Douglas fir is next, with western hemlock and larch following. Some woods such as redwood, cedar, cypress, and eastern white pine are used in areas where they are common and available.

Softwood flooring is available in several sizes and thicknesses; the most common is 25/32″ thick and 4½″ wide. The long edges of the flooring are tongue and groove or side matched in order to give tight joints. Similar to hardwood, the underside is hollowed or V-grooved to minimize warping.

Hardwood squares 9″ X 9″ or 12″ X 12″ by 5/16″ or ½″ thick can be purchased to produce a parquet floor. These squares are available in several types of wood such as oak, maple, mahogany, cherry, and teak.

Thin block flooring is normally produced in prefinished form. The blocks may be nailed to the subfloor or secured with a mastic. These materials, while costing more than strip flooring, require no finishing and are competitive in completed cost.

Non-Resilient Flooring.—These include brick "pavers", ceramic, and clay tile, stone, and terrazzo. These materials are more difficult to install than other

MATERIAL	CHARACTERISTICS	DIFFICULTY OF INSTALLATION	WHERE TO USE	COST PER SQUARE FOOT
Wood Strip Flooring	Long Wear Life Moderate Resiliency Moderate Care Required	Moderate	All areas except bath and utility	$ .70–$1.50
Wood Block Flooring	Moderate Long Wear Life Moderate Resiliency Moderate Care Required	Moderate	All areas except bath and utility	$ .75–$1.30
Linoleum	Moderate Wear Life Resilient Moderate Care Required	Moderate—Low	All areas	$ .40–$1.00
Sheet Vinyl	Long Wear Life High Resiliency Low Care Required	Moderate—Low	All areas	$ .35–$4.00
Vinyl Tile	Long Wear Life High Resiliency Low Care Required	Low	All areas	$ .40–$4.00
Vinyl Asbestos Tile	Long Wear Life Resilient Moderate Low Care Required	Low	All areas	$ .20–$ .70
Asphalt Tile	Moderate Wear Life Moderate Resiliency Moderate High Care	Low	Avoid areas where grease is used	$ .20–$ .30
Ceramic Tile	Long Wear Life No Resiliency Easy Care	Moderate—Difficult	Bathrooms, entrance areas, kitchens, halls	$ .60–$1.75
Clay Tile	Long Wear Life No Resiliency Easy Care	Moderate—Difficult	Bathrooms, entrance areas, kitchens, halls, utility rooms	$1.00–$1.50

flooring materials and usually are the most expensive. However, they have a long life.

They may be installed using a special "thin-set" cement, or in the traditional ¾″ bed of mortar. They require a "grout" (cement fill) between the tiles.

Glazed ceramic tile and terra cotta are relatively non-porous and as a result resist staining. These glazed tiles are, however, susceptible to scratching and crazing (formation of minute cracks) with age. Ceramic tiles range in size from what is called "mosaic" tile of ⅜″ X ⅜″ to a large 16″ X 18″ size.

Mosaic tiles commonly are sold on a backing sheet, making possible the installation of larger areas at one time. It is necessary to grout the joints between each tile after they are set in place.

Unglazed ceramic tile, slate, and flagstone are porous unless treated with special stain-resistant sealants.

Clay or quarry tile, usually unglazed, is produced from clays that result in a strong, long-wearing surface. It is relatively easy to maintain and withstands impact well.

The color range is reds, buffs, blacks, browns, greys, and gold. A semiglazed type is produced in greys, browns, and greens. The product is available with a variety of surface patterns.

The tiles come in several thicknesses from ¼″, ½″, and up to 1½″ depending on their width and length. They may be square, rectangular, or some geometric shape.

Terrazzo is made of marble chips in combination with portland cement mortar and is ground and polished to a smooth finish. It is very resistant to moisture and therefore relatively easy to maintain. It is very noisy and is a tiring walking and work surface.

Most non-resilient flooring is installed using a masonry mortar. This demands a higher degree of skill than other types of flooring and adds to the installed cost.

Cost of each type of flooring will vary depending on its quality and the manufacturer. As an example, asphalt tile may cost as little as 20¢ a square foot while high quality vinyl may reach $4 per square foot. If you consider that an oak floor may cost only 75¢ per square foot, it is obvious that a wide variety of options is available.

Your Own Pool to Get in the Swim

THERE ARE now over a million in-ground residential swimming pools in the United States and the figure is growing at a rate of some 85,000 per year. In addition, another three million American families own above-ground pools large enough to swim in.

Both above and in-ground pools are now within the range of the average family's budget, although pool prices vary throughout the country. Generally, in-ground pools are least expensive in the Northeast and most expensive in the Rocky Mountain area.

The average 1974 cost of a middle size, in-ground pool is around $6,500. Most in-ground backyard pools are 15′ x 30′ to 20′ x 40′ and have three or four feet of surrounding decking. Bank financing is usually available at reasonable rates and terms for homeowners.

Check the effect of the pool on property taxes with the local taxing authority. Usually an in-ground pool is a home improvement taxed on the basis of half its cost. Premiums for liability are already included in the homeowner's policy, but check with your agent to insure maximum coverage which costs just a few dollars more than a basic policy.

Estimates on installation—of which there should be several from reputable dealers—should include labor, construction materials, and basic equipment such as the filter, pump, vacuum cleaner, surface skimmer and ladder. Be sure all bids are for comparable construction and equipment.

Installation costs of an in-ground pool will be the major expense and will vary